NATIONAL MODEL UPDATE

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U.S. Department
of Transportation

**Federal Highway
Administration**

NATIONAL MODEL *update*

Statewide Application of Data Collection and Management Technology to Improve Highway Safety

BACKGROUND

The National Model is a partnership between FHWA and the State of Iowa to demonstrate the successful integration of technologies for data collection, management, and communication of safety information. The objectives of the National Model are to improve data acquisition for roadway incidents, leverage proven technology for law enforcement, streamline the communication of safety information to key stakeholders, and enhance the use of this information for safety programs. New approaches are being used to shorten data collection time, minimize disruption to traffic, increase officer safety and efficiency, and improve data quality.

Transportation and public safety agencies are under pressure to protect the public by improving safety with fewer resources. Increasingly, the agencies that are involved in transportation safety are finding that they can improve performance by working together and sharing information. The State of Iowa is a model for the nation in how agencies work together to define new business processes and streamline the flow of safety information. Rather then duplicating efforts or developing incompatible solutions at the State level, Iowa agencies use an integrated approach to safety management. The two primary agencies, Iowa Department of Transportation (DOT) and Iowa Department of Public Safety (DPS), have worked closely together for the successful application of technologies. The DOT is the lead for software and DPS leads the communication component which makes use of the state fiber optics network. Fiber optics makes it possible to move high volumes of data and images.

The benefits of an integrated approach to safety management include:

- Reduction in the overall effort necessary to c relevant data.
- Electronic data acquisition and disseminatior timely and accurate incident information.
- Common access among agencies to vital inc information including persons involved, seve weather conditions, and location.
- Data transmission and feedback with the court tem for citation information and adjudication re
- Maturity in the use of analytical tools.

SHARING THE IOWA EXPERIENCE

Iowa is actively sharing their experiences with State and local agencies. Direct visits have been to at least fourteen states by an interdisciplinary Additionally inquiries have been handled from 4 tries and several other states.

In December 1998 eleven states were represente National Model Workshop in Des Moines. Beginning fall of 2000, Iowa will again host scanning visits from states. Those interested in these visits should not contact person shown on the back of this brochure

STATUS OF NATIONAL MODEL ACTIVITIES

An integrated set of electronic forms has been deve which shares data among all forms, eliminating du entries and providing for immediate electronic tra sion to remote files at both the local and state leve

The forms include:

- Crash reports (including onsite driver information exchange)
- Commercial vehicle inspections
- Citations
- Drunk driving reports
- Incident reports

GIS LOCATION TOOL

A GIS-based "smart map" screen has been developed which interfaces with the electronic form software. By zooming to the location of an event, touching the screen or clicking the mouse, GIS coordinates are generated and stored with the form.

The Location Tool interfaces with Global Positioning Satellite (GPS) signals if an agency is using GPS. The software will automatically zoom to the receiver's map location if GPS is operating in the background. GPS is not required however to successfully use the GIS Location Tool.

The location tool can also be used for other "stand alone" GIS applications.

GIS—an important tool.

ADAPTING SOFTWARE FOR INDIVIDUAL STATES

A Software Development Kit or "Toolbox" has been developed which facilitates modification of the electronic forms to meet the needs of individual states and agencies. For instance, states will want to add and delete items from the electronic crash form to meet their unique form requirements. The "Toolbox" simplifies that process greatly.

The target knowledge level for the "Toolbox" is a third year computer science student. We expect that states will rely on their computer software staffs or consultants to assist in the process. In order to build edits into the electronic forms, staffs familiar with the business rules associated with each form will have to work with the software modification personnel.

Experienced staff from Iowa will be able to provide some limited assistance to facilitate this process.

SOFTWARE LICENSING

The State of Iowa will make licensing arrangements to share the software with appropriate governments at no cost.

TECHNOLOGY

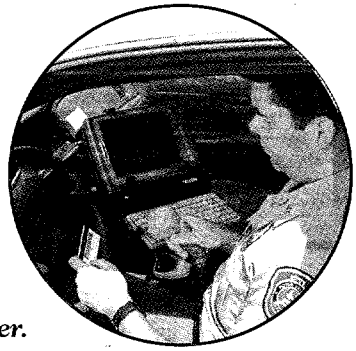
This set of electronic forms takes advantage of the following technologies:

- Pen-based computers
- Portable printers
- Bar code readers
- Digital cameras
- Global positional satellites (GPS)
- Geographical Information System (GIS)

Other technologies planned for integration include: laser measuring devices and voice recognition.

ANALYSIS SOFTWARE

Personal computer based crash analysis software specifically developed to meet the needs of engineers and enforcement personnel had been used for several years, but there was a desire to develop a GIS analysis tool so results could be geographically displayed. Historical crash records were referenced with a link-node system. The roadway data was referenced to a roadway-segment system. By relating both files to an x/y coordinate system, the data could be integrated and displayed using GIS. The GIS analysis software has been developed and the crash data collection software discussed above generates a file, which directly interfaces with the analysis tool. This makes it possible to analyze data the same day that it is collected.



Officer scans license with bar code reader.

FILE LINKING

Development of the GIS location and analysis tools included linking the historical link-node crash files and the roadway inventory files. This linking has made it possible to populate some of the crash report elements without asking the officer to enter them. Those elements include items such as road surface type, locality, type of traffic way, speed limit, road class, route number/name, milepost, and roadway geometrics.

Many states have similar problems in linking linear reference systems to coordinate systems and those solutions can be transferred to others.

MAJOR ACTIVITIES:

MMUCC (Model Minimum Uniform Crash Criteria)

The NHTSA is funding development of an electronic version of MMUCC to be included in the suite of National Model electronic forms. States will then be able to start with the MMUCC recommended electronic crash form and use the Software Development Kit to tailor it to their state needs.

GPS Dispatch

The Department of Justice and the Federal Transit Agency each have active GPS dispatch projects in Iowa. One project involves 100 enforcement, fire, and other emergency vehicles in one urbanized county. The other project involves a rural 10 county transit operation which is interested in sharing GPS dispatch with enforcement, fire, and other emergency vehicles. The National Model project is cooperating with both efforts.

ALERT VEHICLES (FHWA's Advanced Technology Public Safety Vehicle)

The National Model and ALERT projects have been mutually benefiting each other for sometime. We expect to continue to coordinate with the ALERT project by sharing electronic forms and the related technologies.

Crash Outcome Data Evaluation System (CODES)

The NHTSA has funded a CODES project through the Iowa Department of Public Health. Crash, ambulance, and health care records are being linked to provide a more complete picture of the severity of crashes.

AASHTO Traffic Safety Information Management System (TSIMS) PROJECT

The National Model staff continues to coordinate with American Association of State Highway Transportation Officials (AASHTO) on their safety data initiatives. AASHTO is planning to develop shareware as part of their TSIMS project to provide integration of legacy data systems within a State, external systems, and possibly across political subdivision or agency boundaries. Support is being provided to AASHTO so that complementary software is developed.

PARTNERSHIPS

Partners with financial investments in the NATIONAL MODEL have direct input to product development and enhancements. Efforts will continue to identify additional members for the consortium.

For more information contact:
Terry Dillinger, Director of Driver Services, Motor Vehicle Division, Iowa Department of Transportation, Telephone: (515) 237-3153, www.dot.state.ia.us/natmodel

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